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08/869,386	06/05/1997	JAGANNADHA K. SASTRY	UTXC:538/HYL	5686

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DAVID L. PARKER
FULBRIGHT & JAWORSKI L.L.P.
600 CONGRESS AVENUE, SUITE 2400
AUSTIN, TX 78701

EXAMINER	
LE, EMILY M	

ART UNIT	PAPER NUMBER
1648	

DATE MAILED: 06/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	08/869,386	SASTRY ET AL.	
	Examiner	Art Unit	
	Emily Le	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *9/20/99, 3/31/00, 8/25/04+10/22/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29-45,47 and 49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29-45,47 and 49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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DETAILED ACTION

1. To accord Applicant with an opportunity to file a response to the merits set forth in the following office action, the Office grants Applicant with a Non-final office action.

Status of Claims

2. Claims 29-45, 47 and 49 are pending and under examination. Claims 1-28, 46 and 48 are cancelled.

Priority

3. According to the priority statement disclosed in Applicant's specification, it appears that the claimed subject matter defined in the instant application is supported by the parent application serial nos. 07/945865, 07/800832 (presumably 07/800932), 07/410727 and 07/090646. Based on the information given by applicant and an inspection of the patent applications, the Office concludes that the subject matter defined in this application is supported by the disclosure in application serial no. 07/945865, filed 09/16/1992 but is not supported by 07/800832 (presumably 07/800932), 07/410727 and 07/090646 because the priority documents failed to satisfy the requirements of 35 U.S.C. 112, first paragraph. Thus, accordingly, the subject matter defined in claims 29-49 has an effective filing date of 09/16/1992.

Should the applicant disagree with the examiner's factual determination above, it is incumbent upon the applicant to provide the serial number and specific page number(s) of any parent application filed prior to 09/16/1992 which specifically supports the particular claim limitation for each and every claim limitation in all the pending claims

which applicant considers to have been in possession of and fully enabled for prior to 09/16/1992.

Specification

4. The disclosure is objected to because of the following informalities:

The priority information disclosed in lines 10-15 of page 1 of the specification is erroneous. The cited passage states that the instant application is a continuation in part of U.S. Patent Application No. 07/800832; however, upon examination of the disclosure of U.S. Patent Application No. 07/800832 for priority purpose, it is noted that U.S. Patent Application No. 07/800832 is directed to a hair weaving process. The process disclosed therein is unrelated to Applicant's endeavor, HIV. Appropriate correction is required.

Additionally, Applicant's 06/05/1997, 01/04/2000 and 08/05/2004 sequence listing submissions note that SEQ ID NO: 3 is NNTRKSIRIQRGPGRAFVTIGKIG; however, the same amino acid sequence is absent from Applicant's 10/02/1997 and 11/04/1997 sequence listing submissions. Applicant is required to clarify the exact amino acid sequence that is intended to be representative of SEQ ID NO: 3. To do so, Applicant is required to provide a complete and full listing of the sequence listings, including computer readable copies, to ensure proper entry into the sequence database.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 34 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Currently, the disclosure contains two different amino acid sequences for SEQ ID NO: 3. The claim notes that SEQ ID NO: 3 is NNTRKSIRIQRGPGRAFVTIGKIG. The same amino acid sequence is also noted in Applicant's 06/05/1997, 01/04/2000 and 08/05/2004 sequence listing submissions. However, the same amino acid sequence is not presented as SEQ ID NO: 3 in Applicant's 10/02/1997 and 11/04/1997. Applicant is required to clarify the exact amino acid sequence that is intended to be representative of SEQ ID NO: 3.

7. Claims 43-44 recite the limitation "dosage" in line 1 of the claims. There is insufficient antecedent basis for this limitation in the claim.

8. Claims 29-45 and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Based on a precise examination of the specification, it is unclear the activity that is intended by the limitation "directly inhibiting HIV entry".

It is noted that in a response, dated 09/20/99, to an indefinite rejection cited by the Office, which issued 08/13/1998, concerning the recitation "directly in inhibiting HIV entry into a cell"; Applicant submits that the term "HIV infection-inhibiting sequence", which includes the amino acid sequences employed with the claimed invention, refers to:

a peptide sequence that prevents entry of the HIV virus into its target cell. As such, an inhibitory peptide may be characterized as including a peptide sequence that is involved in the infection process, or that functions to contact the target cell. **Infection-inhibiting peptides particularly include peptides that comprise a sequence wherein antibodies against that sequence are capable of inhibiting HIV cellular infection.** [Emphasis added]

However, in the same submission, Applicant also submits that the present invention does not rely on the immune system in order to effect blocking of viral infection.

These two statements contradict one another. It is not possible to facilitate the generation of antibodies against the infection-inhibiting peptides in the absence of reliance on the immune system. Thus, using Applicant's submission as the primary basis for the rejection set forth herein, the claims are rendered indefinite for it remain unclear what is intended with the limitation "directly inhibiting HIV entry into a cell".

9. Claims 31-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the instant, claim 31 further limits the length of the peptide to 15 residues in length; however, this length limitation is not observed in later dependent claim, claim 32. Claim 32 requires the peptide to "comprise" a particular sequence, SEQ ID NO: 1. SEQ ID NO: 1 is an amino acid sequence that is 15 amino acid residues in length.

The issue is the use of the transitional terminology "comprises". Comprises is an open-ended transitional term. Thus, a peptide that "comprises" SEQ ID NO: 1 can also have other amino acid residues. The addition of other amino acid residues, outside of those recited as SEQ ID NO: 1, would result in a peptide that is beyond 15 amino acid residues in length. Such extension would defy the length limitation that is set forth in claim 31.

The same issue also applies to claims 33-34.

10. Claims 36-40 and 43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

This rejection is directed mainly at claim 36. The rejection also applies to claims 37-40 and 43 because the claims depend on a claim that is rejected as indefinite.

Claim 36 is rendered indefinite for the limitation "comprises a single chain comprising". It is unclear what is intended by "single chain". As written, "comprises a single chain", it appears that Applicant intends on requiring the presence of another entity. However, such intention is not readily apparent in the claim.

Additionally, claim 36 is also rendered indefinite because a multimer of the peptide would necessarily defy the length limitation set forth in independent claim 29. As written, claim 36 is directed to a multimer of the peptide, wherein the multimer comprises repeating units of the peptide. Repeating units of a peptide that is 24 amino acid residues in length, for example, would render a peptide that is beyond the maximum amino residues in length required by independent claim 29.

11. Claim 37 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim requires that the repeating units of the peptide be bonded through one or two cysteine residues. In the instance, the claims do not require the presence of cysteine residue(s) in the peptide or specify that cysteine residue(s) be present in the peptide. Ergo, it is unclear how the required bond can take place when no cysteine residue is present.

12. Claim 37 recites the limitation "one or two cysteine residues" in lines 1-2 of the claims. There is insufficient antecedent basis for this limitation in the claim.

13. Claim 38-40 and 43 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear if the recitation "spacer peptide to which multiple copies of said peptide are bonded" is i) a structural limitation or ii) directed at the intended use of the spacer peptide.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claim 49 is rejected under 35 U.S.C. 102(b) as being anticipated by Koito et al.

Newly added claim 49 is directed at a method for directly inhibiting HIV entry into a cell in vitro comprising the step of contacting said cell with a composition comprising a peptide of 8 to 24 residues comprising the sequence RAFVTIGK (SEQ ID NO: 5).

Koito et al. teaches a method of directly inhibiting HIV entry into a cell in vitro comprising the step of contacting said cell with a composition comprising a peptide that is within the 8 to 24 residues in length required by the claimed invention and comprises the sequence RAFVTIGK (SEQ ID NO: 5). [See **Synthetic Peptides**, **HIV-1-induced syncytial inhibition assay** and **Interference of HIV-2 envelope-induced syncytium formation by trypsin inhibitors and epitopes b-like peptides** sections, and Table 1.] Koito et al. teaches the invention as claimed. Ergo, Koito et al. anticipates the claimed invention.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. Claims 29-41 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haynes et al., U.S. Patent No. 5019387 as evidenced by or in view of Koito et al.

The claims are directed to a method for directly inhibiting HIV entry into a cell comprising the step of contacting said cell with a composition comprising a peptide of 8 to 24 residues comprising the sequence RAFVTIGK (SEQ ID NO: 5), wherein said cell is in a human subject. The claims later limit the peptide to 8, 15 and 24 residues in

length; and contacting to injection. The claims also require that the composition be dispersed in a pharmaceutically acceptable aqueous medium, the peptide be RIQRGPGRAFVTIGK and NNTRKSIRIQRGPGRAFVTIGKIG. Additionally, the claims require that the peptide be in the form of a multimer, comprising repeating units of said peptide, wherein the units are bonded through one or two cysteine residues; the multimer comprises a spacer peptide; and that the spacer molecule comprises glycyl residues.

In the instant, the claimed active method step is: contacting the cell with a composition comprising a peptide of 8 to 24 residues comprising the sequence RAFVTIGK (SEQ ID NO: 5); and the resultant affect is inhibition of viral entry into the cell.

Haynes et al. teaches a method of inhibiting viral entry into a cell. The active method step employed by Haynes et al. is the same as that claimed by Applicant, including the composition. The difference(s) between the claimed method and the method of Haynes et al. is:

a) the cell used in the method of Haynes et al. is from a primate. Haynes et al. does not specify the primate as a human subject. However, at the time the invention was made, it would have been prima facie obvious for one of ordinary skill in the art to apply the method of Haynes et al. to human subjects. One of ordinary skill in the art at the time the invention was made would have been motivated to do so to provide therapeutic treatment against HIV to said subjects. One of ordinary skill in the art would have had a reasonable expectation of success for doing so because Haynes

et al. teaches that the production of immunity of HIV in a primate by contacting a cell with a composition that is the same as that claimed. Therefore, one of ordinary of ordinary skill in the art at the time the invention was made would have had a reasonable expectation of producing the claimed invention, absent unexpected results to the contrary.

b) the mechanism of action that Haynes et al. describes for the composition is not the same as that observed by Applicant. Haynes et al. does not describe the mechanism of action as direct inhibition of HIV entry into the cell. However, MPEP § 2112, (II), states that there is no requirement that a person of ordinary skill in the art would have recognized the inherent disclosure at the time of invention, but only that the subject matter is in fact inherent in the prior art reference. Thus, Haynes et al. needs not to appreciate the same mechanism of action as observed by Applicant to anticipate this aspect of the claimed invention.

In the instant, Haynes et al. teaches the same active method step as claimed, while using the same composition, which is in dispersed in a pharmaceutically acceptable aqueous medium, as claimed. The application of said method step by Haynes et al. leads to the achievement of the same resultant affect as claimed. Thus, the composition of Haynes et al. would necessarily have directly inhibited HIV entry into a cell, in addition to the observed production of antibodies that neutralizes HIV. Such mechanism of action is expected of the composition for it is an intrinsic property of the composition, as evidenced by or in view of the teaching of Koito et al. Koito et al. teaches that the same composition directly inhibits HIV entry into a cell.

c) Haynes et al. does not specifically teach 8 residues in length, as required by the claimed invention. Instead, Haynes et al. teaches about 9 residues in length. In the instant, 8 is about 9. Ergo, Haynes et al. anticipates this aspect of the claimed invention.

d) Haynes et al. does not specifically teach 15 or 24 residues in length. Instead, Haynes et al. teaches an upper limit of 35 residues in length, a range of about 9 to 35 residues in length. The number of residues that Haynes et al. teaches encompasses the range that is instantly claimed. Ergo, Haynes et al. anticipates this aspect(s) of the claimed invention.

e) Haynes et al. does not specifically disclose the exact sequence as claimed, RIQRGPGRAFVTIGK and NNTRKSIRIQRGPGRAFVTIGKIG. However, Haynes et al. does anticipate the use of the claimed sequence by teaching the use of a peptide that is about 9 to 35 residues in length, wherein the peptide is derived from CTRPNNNTRKSIRIQRGPGRAFVTIGKIGN. In the instant, the claimed sequences are subsequences of the peptide that Haynes et al. teaches. Ergo, Haynes et al. anticipates this aspect of the claimed invention.

Haynes et al. also teaches that the peptides can be conjugated to larger molecules (multimers), may include spacer molecules. Haynes et al. also teaches the of cysteine residues to link the repeating units, and that glycine residues be used as a spacer molecule. In the instant, the conjugation of the peptide with a spacer molecule would render a peptide to contain a surfactant like micelle. Ergo, Haynes et al. also anticipates this aspect(s) of the claimed invention.

18. Claims 42-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haynes et al., U.S. Patent No. 5019387 as evidenced by or in view of Koito et al., as applied to claim 29.

The claims require that the composition be administered at certain dosage ranges, and that the claimed method further comprises contacting said cell with said composition a second time.

For the purpose of art rejection, claims 43-44 are treated as having proper antecedent basis for the limitation "dosage range".

The significance of Haynes et al. and Koito et al. is noted above for claim 29. It is noted that neither Haynes et al. nor Koito et al. teaches the limitations required by the claimed invention. However, it would have been prima facie obvious for one of ordinary skill in the art at the time the invention was made to optimize treatment protocols, which includes dosage and administration schedule. One of ordinary skill in the art at the time the invention was made would have been motivated to do so to optimize the therapeutic effect provided by the composition against HIV infectivity. One of ordinary skill in the art at the time the invention was made would have had a reasonable expectation of success doing so because optimization of treatment protocol is part of routine experimentation. Therefore, one of ordinary of ordinary skill in the art at the time the invention was made would have had a reasonable expectation of producing the claimed invention, absent unexpected results to the contrary.

Conclusion

19. No claim is allowed.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emily Le whose telephone number is (571) 272 0903. The examiner can normally be reached on Monday - Friday, 8 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel can be reached on (571) 272-0902. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeffrey S. Parkin, Ph.D.
Primary Patent Examiner
Art Unit 1648

E.Le